

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ANTHONY S. LOC and GERALD R. PRUITT

Appeal No. 97-1761
Application No. 08/380,223¹

ON BRIEF

Before COHEN, STAAB, and NASE, Administrative Patent Judges.

NASE, Administrative Patent Judge.

¹ Application for patent filed January 26, 1995. According to the appellants, the application is a continuation of Application No. 08/046,542, filed April 13, 1993, now abandoned.

Appeal No. 97-1761
Application No. 08/380,223

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 16 through 25, which are all of the claims pending in this application.

We REVERSE.

BACKGROUND

The appellants' invention relates to a linear compressor. An understanding of the invention can be derived from a reading of exemplary claim 16, which appears in the appendix to the appellants' brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Zimmer 1936	2,049,936	Aug. 4,
Yano 1987	62-209239 ² (Japan)	Sep. 14,
Kuhl 1992	WO 92/12358 ³ (WIPO)	July 23,

In addition, the examiner also relied upon admitted prior art (i.e., Figures 1-3).

² In determining the teachings of Yano, we will rely on the translation provided by the PTO. A copy of the translation is attached for the appellants' convenience.

³ In determining the teachings of Kuhl, we will rely on the translation provided to the PTO by Schreiber Translations, Inc. A copy of the translation is attached for the appellants' convenience.

Claims 16 through 19, 23 and 24 stand rejected under 35 U.S.C. § 103 as being unpatentable over Yano or Kuhl in view of the admitted prior art.

Claims 16, 20 through 22 and 25 stand rejected under 35 U.S.C. § 103 as being unpatentable over Zimmer in view of the admitted prior art.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 24, mailed August 28, 1996) for the examiner's complete reasoning in support of the rejections, and to the appellants' brief (Paper No. 23, filed April 3, 1996) and reply brief (Paper No. 25, filed November 6, 1996) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, to the

declaration of Gerald R. Pruitt (Paper No. 19, filed January 5, 1996) and to the respective positions articulated by the appellants and the examiner. Upon evaluation of all the evidence before us, it is our conclusion that the examiner has not established obviousness with respect to the claims under appeal. Accordingly, we will not sustain the examiner's rejections under 35 U.S.C. § 103. Our reasoning for this determination follows.

The evidence of nonobviousness submitted by the appellants must be considered en route to a determination of obviousness/nonobviousness under 35 U.S.C. § 103. See Stratoflex Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983). Accordingly, we must carefully evaluate both the combined teachings of the applied prior art and the objective evidence of nonobviousness supplied by the appellants. See In re Oetiker, 977 F.2d 1443, 1445-46, 24 USPQ2d 1443, 1444-45 (Fed. Cir. 1992); In re Piasecki, 745 F.2d 1468, 223 USPQ 785 (Fed. Cir. 1984).

Rejection utilizing Yano or Kuhl

The admitted prior art shown in the appellants' Figures 1-3 discloses a linear compressor 10. The linear compressor 10 comprises, inter alia, a housing 14 having a cylinder 16 defining a compression chamber, a piston 20 slidably located in the cylinder, a motor 26 for causing the piston to reciprocate, and a spring 38 having a single coil. The single coil spring 38 has one end attached to a flange 52 fixed to the housing 14 and the other end attached to retainer 54 which is attached to the motor 26.

Yano discloses a coil spring. As shown in Figures 1-3, the coil spring is an integral structure having an installation section 3 (i.e., a first end member), an installation section 4 (i.e., a second end member), and two coiled wires 1 and 2 extending between the installation sections 3 and 4. The installation sections 3 and 4 are provided with screw holes 5 for securing the spring to other members. The two coiled wires 1 and 2 are opposed to each other (i.e., 180° out of phase with each other). Yano teaches that a problem with a coil spring consisting of a single wire is that such a spring generates a bending moment such that the

center of the coil spring bends. Yano further teaches that his coil spring having two coil wires solves the bending moment problem.

Kuhl discloses a helical spring. As shown in Figure 1, the spring 1 has three turns 2, 3 and 4 between end members 8 and 9.

The declaration of Pruitt establishes: (1) linear compressors have been in development from the middle 1960's; (2) wear out life of linear compressors has been a significant concern through this development; (3) the prior art linear compressor exhibited piston wear at the rate of 400 millionths of an inch per thousand hours of operation and an associated loss of compression ratio of 25% after 4,000 hours; (4) this same compressor, after replacing the single coil spring with a double helix spring, exhibited piston wear at the rate of less than 60 millionths of an inch per thousand hours of operation and an associated loss of compression ratio of 7% after 15,700 hours; (4) prior workers in this field, including Magnavox and Texas Instruments, have tried for many years to solve the

problem of short compressor life, but have failed to do so;

(5) Texas Instruments attempted to improve compressor life by utilizing multiple individual springs with carefully controlled angular orientation, but these showed no substantial improvement; and

(6) Hughes Aircraft Company (the real party in interest in this application)⁴ in the two years following the use of the double helix spring in their coolers has sold approximately 600 linear coolers compared to selling less than 50 linear coolers in the two years prior to the use of the double helix spring in their coolers. In addition, Pruitt states that the improvement shown by his invention when compared to the prior art "is a dramatic and completely unexpected magnitude of improvement" and that the improvement in wear and life of the linear compressor is "significant and startling."

⁴ The "Name and Address Change" (Paper No. 22, filed April 3, 1996) stated that the corporate name of Hughes Aircraft Company had been changed to HE Holdings, Inc., doing business as Hughes Electronics. We note that this name change has not been recorded in the PTO pursuant to 37 CFR § 3.11.

While the combined teachings of the applied prior art may have made the subject matter of claims 16 through 19, 23 and 24 prima facie obvious, it is our opinion that Pruitt's declaration is sufficient to rebut the prima facie case of obviousness. As stated in In re De Blauwe, 736 F.2d 699, 706 n. 8, 222 USPQ 191, 197 n. 8 (Fed. Cir. 1984), "A proper showing of unexpected results will rebut a prima facie case of obviousness. In re Fenn, 639 F.2d 762, 208 USPQ 470 (CCPA 1981); In re Murch, 464 F.2d 1051, 175 USPQ 89 (CCPA 1972)." Furthermore, when the appellants demonstrate substantially improved results, as the appellants did here, and state that the results were unexpected, this suffices to establish unexpected results in the absence of evidence to the contrary. See In re Soni, 54 F.3d 746, 751, 34 USPQ2d 1684, 1688 (Fed. Cir. 1995). The examiner has not provided any persuasive basis to question the comparative data and assertion that the demonstrated results were unexpected. Thus, we are persuaded that the examiner's determination that the evidence contained in the declaration was insufficient to rebut the examiner's prima facie case of obviousness was erroneous.

For the reasons set forth above, the decision of the examiner to reject claims 16 through 19, 23 and 24 under 35 U.S.C. § 103 as being unpatentable over Yano or Kuhl in view of the admitted prior art is reversed.

Rejection utilizing Zimmer

Zimmer discloses a yieldable shaft coupling. As shown in Figure 2, the shaft coupling includes a casing 1, a flange 2, a spring coupler B and flange 17. The spring coupler B includes a tube having two helical slots 3 and 4 spaced apart by portion 5. The slots 3 and 4 form two helical spring sections and the slots 3 and 4 are respectively right hand and left hand.

The teachings of the admitted prior art and the evidence in the Pruitt declaration have been set forth above.

Upon evaluation of all the evidence before us, we reach the conclusion that it would not have been obvious to one of ordinary skill in the art at the time the invention was made to replace the single coil spring in the prior art linear

compressor with a spring as shown by Zimmer. Thus, we agree with the appellants' argument (brief, p. 13) that the combined teachings of Zimmer and the admitted prior art would not have suggested the claimed invention. That is, the examiner did not establish a prima facie case of obviousness. In any event, for the reasons set forth previously, we are persuaded that the evidence contained in Pruitt's declaration was sufficient to overcome a prima facie case of obviousness.

For the reasons set forth above, the decision of the examiner to reject claims 16, 20 through 22 and 25 under 35 U.S.C. § 103 as being unpatentable over Zimmer in view of the admitted prior art is reversed.

CONCLUSION

To summarize, the decision of the examiner to reject claims 16 through 25 under 35 U.S.C. § 103 is reversed.

REVERSED

IRWIN CHARLES COHEN)
Administrative Patent Judge)
)
)
)
)
) BOARD OF PATENT
LAWRENCE J. STAAB) APPEALS
Administrative Patent Judge) AND
) INTERFERENCES
)
)
)
JEFFREY V. NASE)
Administrative Patent Judge)

Appeal No. 97-1761
Application No. 08/380,223

Page 13

PATENT DOCKET ADMINISTRATION
HUGHES ELECTRONICS
BLDG. C01/A126
P.O. BOX 80028
LOS ANGELES, CA 90080-0028

APPEAL NO. 97-1761 - JUDGE NASE
APPLICATION NO. 08/380,223

APJ NASE

APJ COHEN

APJ STAAB

DECISION: **REVERSED**

Prepared By: Delores A. Lowe

DRAFT TYPED: 10 Jun 98

FINAL TYPED: